

ABSTRACT OF THE DISCLOSURE

A semiconductor device having a plurality of electrothermal conversion elements and a plurality of switching elements for flowing current through the

5 electrothermal conversion elements, respectively formed on a semiconductor substrate of a first conductivity type, wherein each of the switching elements is an insulated gate field effect transistor including: a first semiconductor region of a second

10 conductivity type opposite to the first conductivity type, the first semiconductor region being formed on a principal surface of the semiconductor substrate, a second semiconductor region of the first conductivity type for providing a channel region, the second

15 semiconductor region being formed adjacent to the first semiconductor region, a source region of the second conductivity type formed in a surface layer of the second semiconductor region, a drain region of the second conductivity type formed in a surface

20 layer of the first semiconductor region, and a gate electrode formed on a gate insulating film on the channel region, and a resistivity of the semiconductor substrate is 5 to 18 Ωcm , and the first semiconductor region has a depth of 2.0 to 2.2 μm

25 along a depth direction of the semiconductor substrate and an impurity concentration of 1×10^{14} to $1 \times 10^{18}/\text{cm}^3$.